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The formin CYK-1 (green) localizes to the Z lines of sarcomeres in *C. elegans* body wall muscles. Mi-Mi et al. demonstrate that CYK-1 and a second formin called FHOD-1 assemble actin filaments into the contractile lattice of these striated muscle cells. Nuclei are stained blue.
Image © 2012 Mi-Mi et al.
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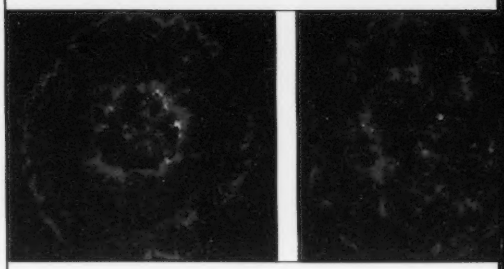

Qi et al. reveal how hypoxia up-regulates the proapoptotic protein Bnip3 to promote lumen formation in epithelial tissues. Compared to a wild-type control (left), caspase-3 activation (green) is reduced in an embryoid body lacking the transcription factor HIF-1β (right), delaying the formation of a central cavity. The embryoid bodies are also stained for F-actin (red) and the basement membrane marker perlecan (blue). Image © 2012 Qi et al.
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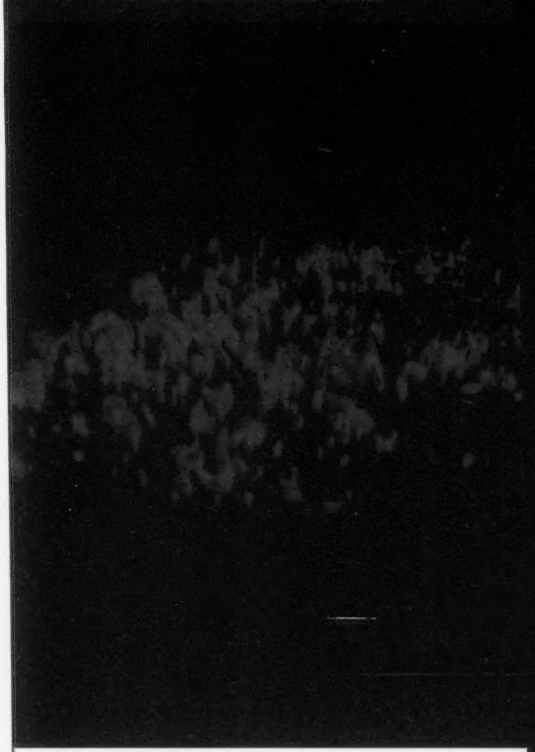

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A photoactivatable version of the microvillar scaffold protein EBP50 (green) is labeled in a subset of microvilli (red) on the apical surface of epithelial cells. Garbett and Bretscher find that EBP50 is surprisingly dynamic inside microvilli and that its turnover is regulated by its PDZ domains.

Image © 2012 Garbett and Bretscher.

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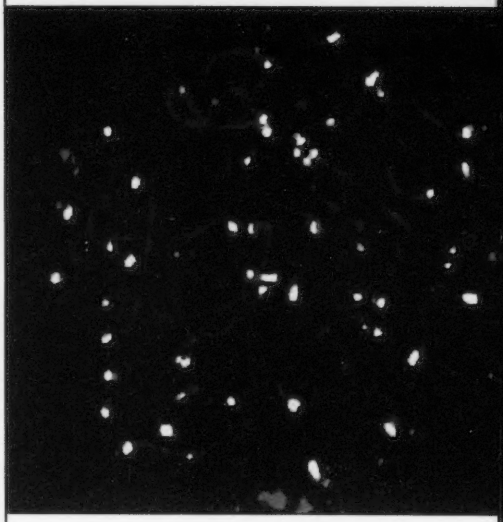

Morimoto et al. reveal that KASH5 (green) partners with SUN1 (red) at the ends of chromosomes in early meiosis, coupling them to cytoplasmic dynein to drive chromosome movements and homologue pairing. The synaptonemal complex is labeled blue.
Image © 2012 Morimoto et al.
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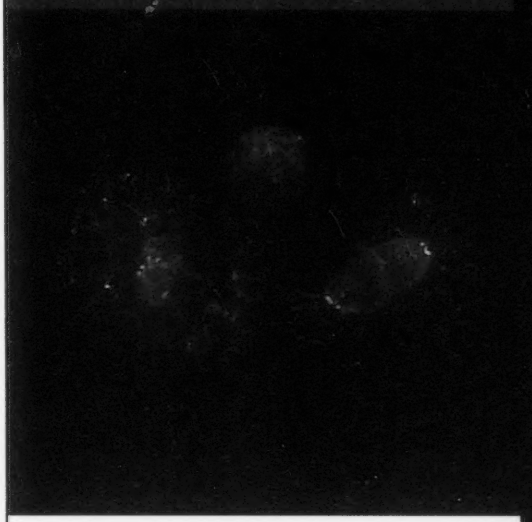

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Microtubules (green) in a two-cell stage mouse embryo self-assemble into a mitotic spindle from multiple microtubule-organizing centers (red), a mechanism similar to meiotic spindle formation. Courtois et al. reveal that cells gradually transition from meiosis to mitosis over the first few divisions of embryonic development. Chromosomes in both the cells and polar body are stained blue. Image © 2012 Courtois et al.
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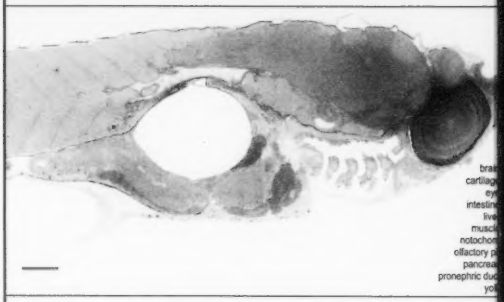

Faas et al. develop a technique to map the ultrastructure of tissues by stitching together large numbers of electron micrographs. The image shows a high resolution section through a zebrafish embryo, with different colors indicating distinct embryonic tissues.
Image © 2012 Faas et al.
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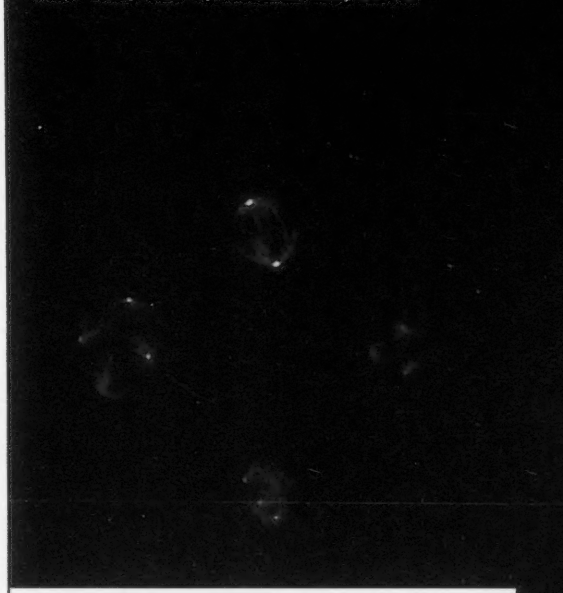

On the cover

Compared with a control cell (top), cells lacking either the clathrin heavy chain CHC17 (right), clathrin light chains (bottom), or both (left) display an increased number of centrosomes (green) and a multipolar mitotic spindle (red). The clathrin light chains are stained blue. Foraker et al. reveal that clathrin promotes centrosome integrity by stabilizing the microtubule-binding protein ch-TOG. Image © 2012 Foraker et al.
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575 Ubiquitylation by Trim32 causes coupled loss of desmin, Z-bands, and thin filaments in muscle atrophy
Shenhav Cohen, Bo Zhai, Steven P. Gygi, and Alfred L. Goldberg

591 Clathrin promotes centrosome integrity in early mitosis through stabilization of centrosomal ch-TOG
Amy B. Foraker, Stéphane M. Camus, Timothy M. Evans, Sophia R. Majeed, Chih-Ying Chen, Sabrina B. Taner, Ivan R. Corrêa Jr., Stephen J. Doxsey, and Frances M. Brodsky

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Bianca Kraft, Corinna D. Berger, Veronika Wallkamm, Herbert Steinbeisser, and Doris Wedlich

711 A steep phosphoinositide bis-phosphate gradient forms during fungal filamentous growth
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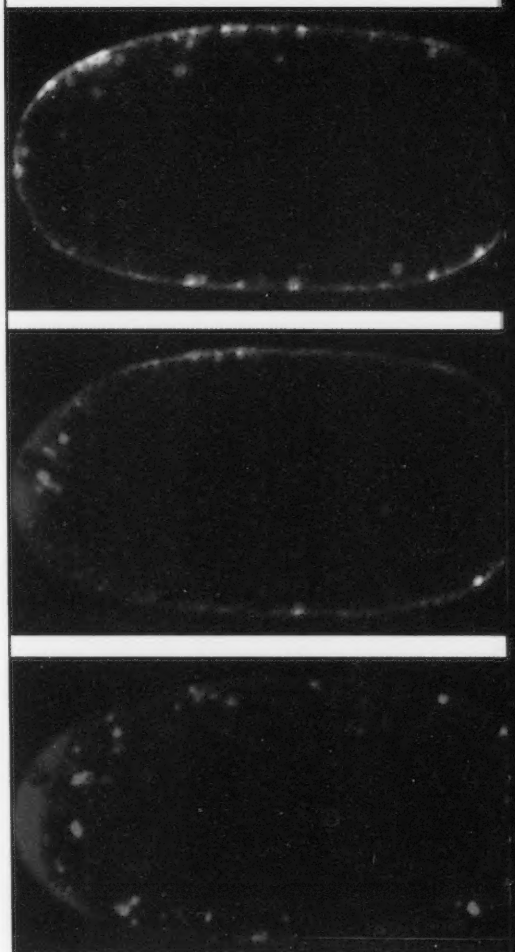

Olson et al. describe the assembly of the trilaminar eggshell and permeability barrier that surrounds *C. elegans* embryos. In one step, pictured here as a series of time-lapse images, the enzyme chitin synthase (green) is internalized at the same time as cortical granules containing proteoglycans (red) are exocytosed, creating a switch between the chitin and proteoglycan layers of the eggshell. Image © 2012 Olson et al.
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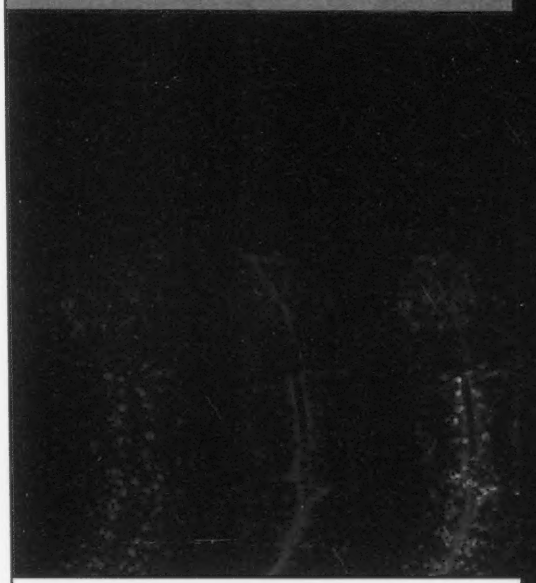

On the cover

In a *C. elegans* L4 larva, the acyl-CoA synthetase ACS-22/FATP1 (green) localizes to the endoplasmic reticulum, whereas the diacylglycerol acyltransferase DGAT2 (red) resides on lipid droplets. Xu et al. reveal that FATP1 and DGAT2 form a complex at the ER–lipid droplet interface to promote triglyceride synthesis and lipid droplet expansion.
Image courtesy of Ningyi Xu.
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865 CYK4 inhibits Rac1-dependent PAK1 and ARHGEF7 effector pathways during cytokinesis
Ricardo Nunes Bastos, Xenia Penate, Michelle Bates, Dean Hammond, and Francis A. Barr

881 Bacterial protein translocation requires only one copy of the SecY complex in vivo
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895 The FATP1–DGAT2 complex facilitates lipid droplet expansion at the ER–lipid droplet interface
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927 Dishevelled stabilization by the ciliopathy protein Rpgrip1l is essential for planar cell polarity
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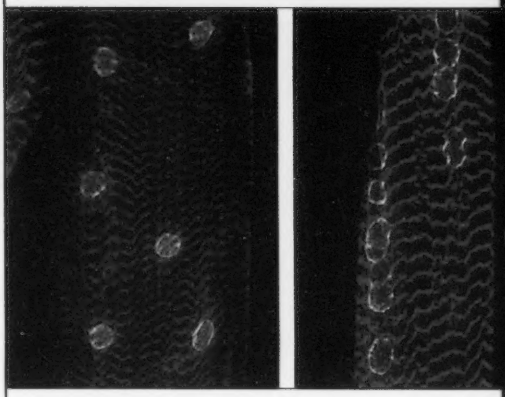
941 Nodal signaling regulates endodermal cell motility and actin dynamics via Rac1 and Prex1
Stephanie Woo, Michael P. Housley, Orion D. Weiner, and Didier Y.R. Stainier



Elhanany-Tamir et al. demonstrate that the KASH proteins Klar and MSP-300 cooperate to distribute nuclei and other organelles within the striated muscle fibers of *Drosophila* larvae. Nuclei (green) are spaced evenly apart in wild-type muscles (left) stained for MSP-300 (red), but they cluster together in mutants whose Klar and MSP-300 proteins both lack their KASH domains (right).
Image © 2012 Elhanany-Tamir et al.
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991 Crumbs limits oxidase-dependent signaling to maintain epithelial integrity and prevent photoreceptor cell death
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1011 Cell confinement controls centrosome positioning and lumen initiation during epithelial morphogenesis
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1025 INF2 promotes the formation of detyrosinated microtubules necessary for centrosome reorientation in T cells
Laura Andrés-Delgado, Olga M. Antón, Francesca Bartolini, Ana Ruiz-Sáenz, Isabel Correas, Gregg G. Gundersen, and Miguel A. Alonso

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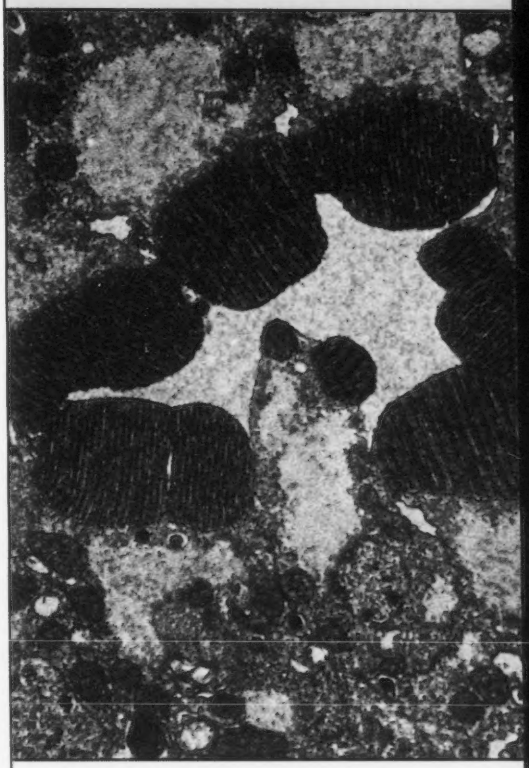


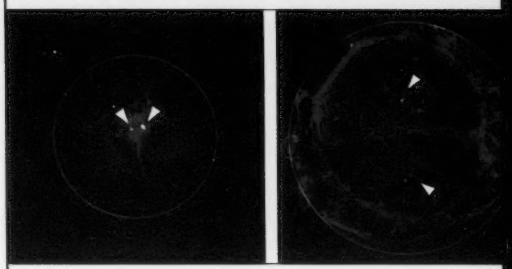
On the cover

An electron micrograph shows a cluster of *Drosophila* photoreceptor cells lacking the apical membrane protein Crumbs, which degenerate upon exposure to light. Chartier et al. reveal that Crumbs protects retinal cells by limiting the production of reactive oxygen species by Rac1 and NADPH oxidase. Image courtesy of François Chartier.
See page 991.

1039 **Dynein light chain 1 and a spindle-associated adaptor promote dynein asymmetry and spindle orientation**
Anja K. Dunsch, Dean Hammond, Jennifer Lloyd, Lothar Schermelleh, Ulrike Gruneberg, and Francis A. Barr

1055 **Translocation of CaMKII to dendritic microtubules supports the plasticity of local synapses**
Mado Lemieux, Simon Labrecque, Christian Tardif, Étienne Labrie-Dion, Éric LeBel, and Paul De Koninck

1075 **Temporal sampling, resetting, and adaptation orchestrate gradient sensing in sperm**
Nachiket D. Kashikar, Luis Alvarez, Reinhard Seifert, Ingo Gregor, Oliver Jäckle, Michael Beyermann, Eberhard Krause, and U. Benjamin Kaupp



Rodríguez-Fraticelli et al. demonstrate that cell confinement promotes epithelial polarization and lumen formation. When MDCK cells are seeded onto a small, collagen-coated micropattern (left), actin (red) concentrates at cell–cell contacts, and centrosomes (green, arrowheads) orient toward the micropattern center. But in cells seeded on a larger surface (right), actin fibers accumulate all around the cells, and centrosomes orient toward the periphery of the micropattern.
Image © 2012 Rodríguez-Fraticelli et al.
See page 1011.